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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,396	11/21/2003	James J. Spence	D/A3213	2562

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EXAMINER

MORRISON, THOMAS A

ART UNIT PAPER NUMBER

3653

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/719,396	SPENCE ET AL.	
	Examiner	Art Unit	
	Thomas A. Morrison	3653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 February 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3,5,6,10,11 and 14-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,6,10,11,14,16-18 and 20 is/are rejected.
- 7) ☒ Claim(s) 15 and 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. The indicated allowability of claim 7 is withdrawn. The examiner failed to appreciate the extent of the disclosure provided in U.S. Patent No. 3,477,558 (Fleischauer). Rejections in view of this reference follow.

#### ***Claim Objections***

2. Claims 1, 10 and 17 are objected to because of the following informalities: (a) "said first layer" in line 14 of claim 1 should be -- said first perforated layer --; (b) "non-perforated" in line 18 of claim 10 should be -- non-perforated layer --; (c) "said first layer" in line 22 of claim 10 should be -- said first perforated layer --; and (d) "areas." in line 20 of claim 17 should be -- areas; --. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,3, 5 and 10-11 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,477,558 (Fleischauer).

Regarding independent claim 1, Figs. 10E and 15-17 show an air diffusing vacuum transport belt (110') for transporting image carrying substrates without vacuum belt induced image defects, the air diffusing vacuum transport belt (110') including

(a) a first perforated layer (135) for mounting over a vacuum plenum (e.g., as shown in Fig. 16), the first perforated layer (135) including a top surface and a bottom surface, solid areas, and perforated hole areas (137) interspersing the solid areas for directing pressurized airflow from the top surface through to the bottom surface; and

(b) a second non-perforated layer (120') formed over the top surface of the first perforated layer (135) and covering the solid areas and the perforated hole areas, the second non-perforated layer (120') having an inner surface positioned over the top surface of the first perforated layer (135), and an outer surface for uniformly supporting substrates, and the second non-perforated layer (120') being made of a selected electrically non-conductive material (polyurethane foam) having a density that is less than a density of the first layer, and being porous to air for diffusing pressurized airflow from the outer surface thereof into the perforated hole areas of the first perforated layer (135), thereby enabling transporting of image carrying substrates without vacuum belt induced image defects.

Regarding independent claim 10, Figs. 10E and 15-16A show an air diffusing vacuum transport assembly (Figs. 15 and 16) including

(a) a vacuum plenum assembly (Fig. 16) including a vacuum chamber (202);

(b) belt support means (including 112' and 114') for supporting a moveable continuous belt around the vacuum plenum assembly (Fig. 16); and

(c) an air diffusing vacuum transport belt (110') mounted around the vacuum plenum assembly (Fig. 16) for supporting and transporting a substrate over the vacuum plenum assembly (Fig. 16), the air diffusing vacuum transport belt (110') including:

(i) a first perforated layer (135 in Fig. 10E) for mounting over the vacuum plenum assembly (Fig. 16), the first perforated layer (135) including a top surface and a bottom surface, solid areas, and perforated hole areas (137) interspersing the solid areas for directing pressurized airflow from the top surface through to the bottom surface; and

(ii) a second non-perforated layer (120') formed over the top surface of the first perforated layer (135) and covering the solid areas and the perforated hole areas, the second non-perforated (120') having an inner surface positioned over the top surface of the first perforated layer (135), and an outer surface for uniformly supporting substrates, and the second non-perforated layer (120') being made of a selected electrically non-conductive material (polyurethane foam) having a density that is less than a density of the first layer, and being porous to air for diffusing pressurized airflow from the outer surface thereof into the perforated hole areas (137) of the first perforated layer (135), thereby enabling transporting of image carrying substrates without vacuum belt induced image defects.

Regarding claims 1 and 10, these claims require the second non-perforated layer (120') to be made of a selected **electrically non-conductive material**. First it is noted

Art Unit: 3653

that column 14, lines 36-37 explains that element 120' is a foam layer, and column 13, lines 35-36 disclose that open-celled foam material such as polyurethane is a suitable material for an outer layer of a belt. Polyurethane foam is an electrically non-conductive material, as claimed. With regard to the lower density of the second non-perforated layer (120') than that of the first perforated layer (135), it is noted that the dictionary defines density as "the mass of a substance per unit volume". See Webster's Collegiate Dictionary, 10<sup>th</sup> Ed., at pg. 309. Column 14, lines 43-44 disclose that element 135 can be an elastic material, while column 13, lines 34-36 disclose that an open-celled foam material is suitable for use as an outer belt layer. As such, it appears that the "**open-celled foam**" material of the second non-perforated layer (outer belt layer) has less mass per unit volume than that of the "**elastic material**" of the first perforated layer. In other words, the second non-perforated layer has a lower density than that of the first perforated layer. Thus, all of the limitations of claims 1 and 10 are met.

Regarding dependent claim 3, Fig. 10E shows that the second non-perforated layer (120') is laminated onto the top surface of the first perforated layer (135).

Regarding dependent claim 5, Fig. 10E shows that the outer surface of the second non-perforated layer (120') is smooth for providing a uniform support surface for a back side of an image carrying substrate.

Regarding dependent claim 11, Fig. 15 shows that the vacuum plenum assembly includes a top plate (crisscrossed structure in Fig. 15) having airflow apertures located below the air diffusing vacuum transport belt (110').

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the Fleischauer patent, and further in view of U.S. Patent No. 5,535,997 (Croyle et al.). The Fleischauer patent discloses all of the limitations of claim 6, except for the material being a woven fabric material or felt.

The Croyle et al. patent discloses that it is well known that woven fabrics and felt materials are flexible and air-permeable and sometimes used in connection with suction devices. See, e.g., column 4, lines 1-3. As such, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the air diffusing vacuum transport belt with the second non-perforated layer made from either woven fabric material or felt, because these materials are flexible as well as air-permeable, as taught by the Croyle et al. patent.

5. Claims 10-11, 14, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,032,875 (Gooray et al.) in view of U.S. Patent No. 3,477,558 (Fleischauer).

Regarding independent claim 10, Figs. 1 and 5A-5B of the Gooray et al. patent show an air diffusing vacuum transport assembly (Fig. 5A) including

(a) a vacuum plenum assembly (Fig. 5A) including a vacuum chamber (inside 330);

(b) belt support means (i.e., whatever supports the belt 305 in Fig. 5B) for supporting a moveable continuous belt (305) around the vacuum plenum assembly (Fig. 5A); and

(c) an air diffusing vacuum transport belt (305) mounted around the vacuum plenum assembly (Fig. 5A) for supporting and transporting a substrate over the vacuum plenum assembly. However, the Gooray et al. patent does not specifically show that the air diffusing vacuum transport belt has first and second layers, as claimed.

Figs. 10E and 15-16 of the Fleischauer patent disclose that it is well known to provide an air diffusing vacuum transport belt (110') on a vacuum plenum assembly (Fig. 16), in which the air diffusing vacuum transport belt (110') includes (i) a first perforated layer (135 in Fig. 10E) for mounting over the vacuum plenum assembly (Fig. 16), the first perforated layer (135) including a top surface and a bottom surface, solid areas, and perforated hole areas (137) interspersing the solid areas for directing pressurized airflow from the top surface through to the bottom surface; and (ii) a second non-perforated layer (120') formed over the top surface of the first perforated layer (135) and covering the solid areas and the perforated hole areas, the second non-perforated (120') having an inner surface positioned over the top surface of the first perforated layer (135), and an outer surface for uniformly supporting substrates, and the second non-perforated layer (120') being made of a selected electrically non-conductive



Art Unit: 3653

material having a density that is less than a density of the first layer, and being porous to air for diffusing pressurized airflow from the outer surface thereof into the perforated hole areas (137) of the first perforated layer (135), thereby enabling transporting of image carrying substrates without vacuum belt induced image defects. The Abstract of the Fleischauer patent explains that such an arrangement utilizes vacuum support principles in general conveying or transporting of articles, without the use of high differential pressures, movable vacuum heads, and large leakage rates. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the apparatus of the Gooray et al. patent with the belt structure of the Fleischauer in order to facilitate conveying of articles without high differential pressures or large leakage rates, as taught by the Fleischauer patent.

Regarding independent claim 17, Figs. 1 and 5A-5B of the Gooray et al. patent show an image producing machine including

- (a) a belt module (including Figs. 5A-5B);
- (b) sheet feeders (including 59, 100, 66, 10 and 32) for supplying and moving an image receiving sheet through the belt module;
- (c) imaging means (station C) including toner for forming an image on the image receiving sheet; and
- (d) an air diffusing vacuum transport assembly (Figs. 5A-5B) for transporting the image receiving sheet within the belt module, the air diffusing vacuum transport assembly (Figs. 5A-5B) including an air diffusing vacuum transport belt (305) for

supporting and transporting a sheet. However, the Gooray et al. patent does not specifically show that the air diffusing vacuum transport belt has first and second layers, as claimed.

Figs. 10E and 15-16 of the Fleischauer patent disclose that it is well known to provide an air diffusing vacuum transport belt (110') on a sheet conveying apparatus (Fig. 16), in which the air diffusing vacuum transport belt (110') includes (i) a first perforated layer (135 in Fig. 10E) for mounting over a vacuum plenum (Fig. 16), the first perforated layer (135) including a top surface and a bottom surface, solid areas, and perforated hole areas (137) interspersing the solid areas for directing pressurized airflow from the top surface through to the bottom surface; and (ii) a second non-perforated layer (120') formed over the top surface of the first perforated layer (135) and covering the solid areas and the perforated hole areas, the second non-perforated layer (120') having an inner surface positioned over the top surface of the first perforated layer (135), and an outer surface for uniformly supporting sheets, and the second non-perforated layer (120') being made of a selected electrically non-conductive material having a density that is less than a density of the first layer, and being porous to air for diffusing pressurized airflow from the outer surface thereof into the perforated hole areas (137) of the first perforated layer (135), thereby enabling transporting of image carrying sheets without vacuum belt induced image defects. The Abstract of the Fleischauer patent explains that such an arrangement utilizes vacuum support principles in general conveying or transporting of articles, without the use of high differential pressures, movable vacuum heads, and large leakage rates. It would have

been obvious to one of ordinary skill in the art at the time the invention was made to provide the apparatus of the Gooray et al. patent with the belt structure of the Fleischauer in order to facilitate conveying of articles (e.g., substrates) without high differential pressures or large leakage rates, as taught by the Fleischauer patent.

Regarding claims 10 and 17, these claims require the second non-perforated layer (120') to be made of a selected **electrically non-conductive material**. First it is noted that column 14, lines 36-37 of Fleischauer explain that element 120' is a foam layer, and column 13, lines 35-36 disclose that open-celled foam material such as polyurethane is a suitable material for an outer layer of a belt. Polyurethane foam is an electrically non-conductive material, as claimed. With regard to the lower density of the second non-perforated layer (120') than that of the first perforated layer (135), it is noted that the dictionary defines density as "the mass of a substance per unit volume". See Webster's Collegiate Dictionary, 10<sup>th</sup> Ed., at pg. 309. Column 14, lines 43-44 of Fleischauer disclose that element 135 can be an elastic material, while column 13, lines 34-36 disclose that an open-celled foam material is suitable for use as an outer belt layer. As such, it appears that the "**open-celled foam**" material of the second non-perforated layer (outer belt layer) has less mass per unit volume than that of the "**elastic material**" of the first perforated layer. In other words, the second non-perforated layer has a lower density than that of the first perforated layer. Thus, all of the limitations of claims 10 and 17 are met.

Regarding dependent claim 11, Fig. 15 of the Fleischauer patent shows that the vacuum plenum assembly includes a top plate (crisscrossed structure in Fig. 15) having airflow apertures located below the air diffusing vacuum transport belt (110').

Regarding dependent claim 14, the Gooray et al. patent discloses that the belt support means includes a heat pipe (Fig. 5B) for removing heat from the air diffusing vacuum transport belt (305). See also column 6, lines 12-33 for explanation of the heat pipe roller assembly.

Regarding dependent claim 18, the Gooray et al. patent discloses that the belt support means includes a heat pipe (Fig. 5B) for removing heat from the air diffusing vacuum transport belt (305). See also column 6, lines 12-33 for explanation of the heat pipe roller assembly.

6. Claims 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,032,875 (Gooray et al.) in view of U.S. Patent No. 3,477,558 (Fleischauer) as applied to claims 14 and 17 above, and further in view of U.S. Patent Publication No. 2003/0094273 (Toth et al.)(hereinafter "the Toth et al. publication"). The Gooray et al. patent in view of the Fleischauer patent discloses all of the limitations of claims 16 and 20, except for the cooling fins for dissipating heat from the heat pipe.

Figs. 1-3 of the Toth et al. publication discloses that it is well known to provide a heat pipe (12) with cooling fins (including 14), and explains that the Toth et al. device offers the advantage of provide cooling of the heat pipe (12) by developing natural

convection air flow in any orientation because, unlike old fin arrangements, there is nothing to block air flow in a depth direction of the Toth et al. device. See, e.g., numbered paragraph [0019]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the heat pipe arrangement of Goorey et al. (see, e.g., Fig.5b) with a corrugated fin arrangement in order to provide cooling of the heat pipe arrangement of Goorey et al. by developing natural convection air flow in any orientation, as disclosed by Toth et al. As such, all of the limitations of claims 16 and 20 are met.

### ***Response to Arguments***

7. Applicant's arguments filed 02/06/2006 have been fully considered but they are not persuasive. Applicant argues that

Applicant has amended independent Claim 1, to now include the allowable Claim 7 (incorporating amended claim 4). As such amended independent Claim 1 now has the same scope and limitations as allowable Claim 7 rewritten in independent form. Amended Independent Claim 1 as such is now respectfully submitted as allowable. To avoid claim duplication, allowable Claim 7 and Claim 4 have been canceled. Remaining dependent Claims 3,5 and 6 that now depend from amended Claim 1 as such, are also respectfully submitted as now allowable.

Further, Applicant has also amended Independent Claim 10, to now also include the allowable limitation of Claim 7 (incorporating amended claim 4). As such amended independent Claim 10 as such is now also respectfully submitted as allowable. Remaining dependent Claims 11, 14, 15 and 16 that now depend from amended Claim 10 as such, are also respectfully submitted as now allowable.

Lastly, Applicant has amended independent Claim 17, to include the allowable limitation of Claim 7 (incorporating amended claim 4). As such amended independent Claim 17 as such is now also respectfully submitted as allowable. New dependent Claims 18, 19 and 20 that now depend from amended Claim 17 as such, are also respectfully submitted as now allowable.

In response, it is noted that originally filed claim 7 recited that the second non-perforated layer is made from a selected material that is electrically non-conductive. The examiner understood that the second non-perforated layer (120') shown in Fig. 10E can be made from open-celled foam material such as polyurethane. See, e.g., column 13, lines 35-36 of the Fleischauer patent. However, the examiner failed to appreciate that polyurethane foam is non-electrically conductive. See, e.g., column 3, lines 14-26 of U.S. Patent No. 4,006,546 (Anderson et al.) and numbered paragraph [0023] of U.S. Patent Publication No. 2005/0130023 (Lebowitz et al.). Thus, all of the limitations required by originally filed claim 7, which was added to originally filed claims 1, 10 and 17, are met. The rejections of claims 1, 3, 5, 6, 10, 11, 14 and 17 are outlined above.

#### ***Allowable Subject Matter***

8. Claims 15 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas A. Morrison whose telephone number is (571) 272-7221. The examiner can normally be reached on M-F, 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathy Matecki can be reached on (571) 272-6951. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3653

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

04/10/2006

A handwritten signature in black ink that reads "Kathy Matecki". The signature is written in a cursive, flowing style.

**KATHY MATECKI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3600**